Working with NSF: Proposing, Reviewing, and Rotating

Kelsey Cook

Investments in people, ideas, and tools

http://nsf.gov/div/index.jsp?div=CHE

Programs and Funding Opportunities

Key: C Crosscutting | N NSF-wide

Disciplinary Research Activities

- Chemical Catalysis (CAT)
- Chemical Measurement and Imaging (CMI)
- Chemical Structure, Dynamics and Mechanisms (CSDM)
- Chemical Synthesis (SYN)
- Chemistry of Life Processes (CLP)
- Environmental Chemical Sciences (ECS)
- Macromolecular, Supramolecular and Nanochemistry (MSN)
- Theory, Models and Computational Methods (TMC)

Integrative Chemistry Activities (ICA)

- American Competitiveness in Chemistry-Fellowship (ACC-F)
- Centers for Chemical Innovation (CCI)
- Chemistry Research Experiences for Undergraduates (REU)
- Chemistry Research Instrumentation and Facilities (CRIF)
- Collaborative Research in Chemistry (CRC)
- Discovery Corps Fellowships (DCF)
- Undergraduate Research Collaboratives (URC)

Important Things to Know

- Cyber-Enabled Chemistry
- National Laboratories and User Facilities
- NSF CHE and the Global Community

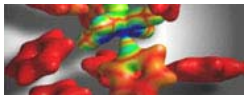
Other Programs

- CHE-DMR-DMS Solar Energy Initiative (SOLAR)
- International Collaboration in Chemistry between US Investigators and their Counterparts Abroad (CMSA)
- NSF-NIST Interaction in Chemistry, Materials Research, Molecular Biosciences, Bioengineering, and Chemical Engineering C
- Interagency Opportunities in Metabolic Engineering

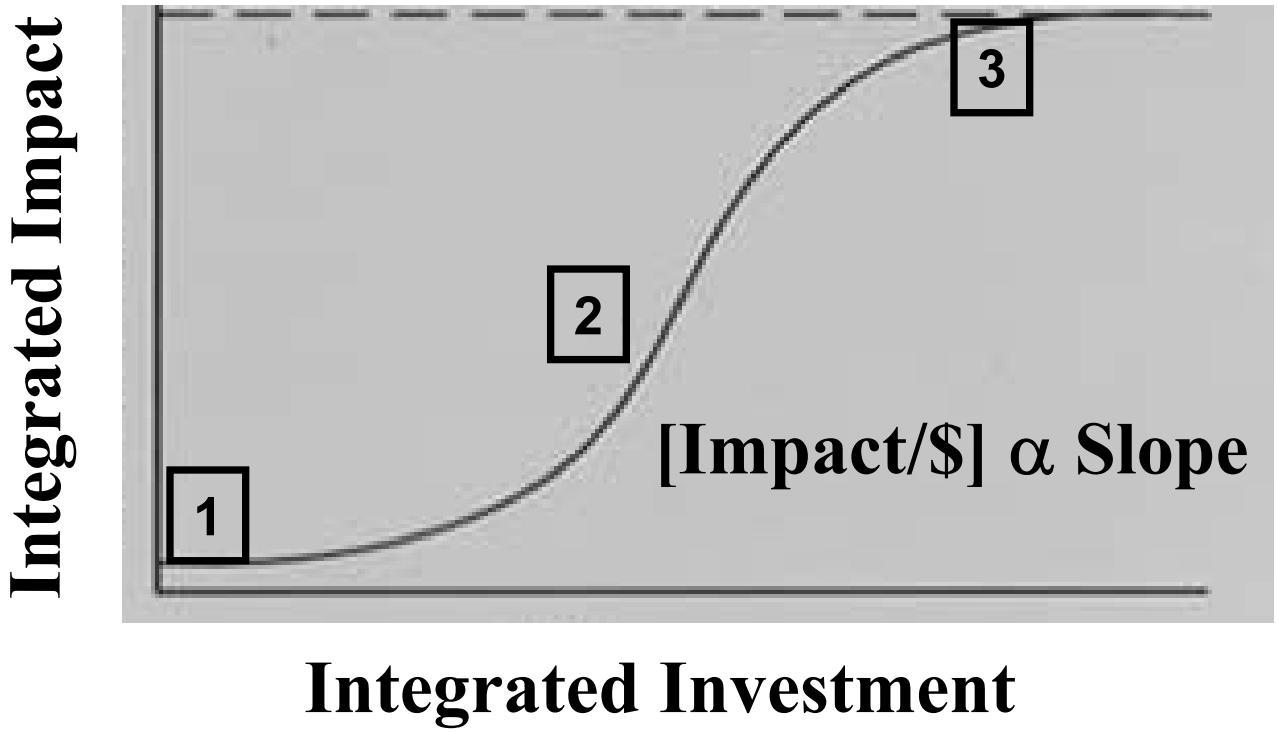
Chemistry Centers

- Centers for Chemical Innovation (CCI)

Winning Proposals



Advancing the Frontier



"…if it's 'safe science,' NSF should not fund it." A. Bement

Transformative Research

- What do we mean by transformative or high-risk research?
- How do we identify it?
- How do we plan for it?

Promoting Transformative Research
One mechanism: EArly-Concept Grants for Exploratory Research (EAGER)

High-risk, high-payoff projects

Timeliness

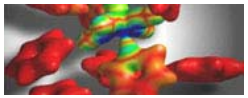
Up to $300k for 2 year

Call us before submitting

Internal review

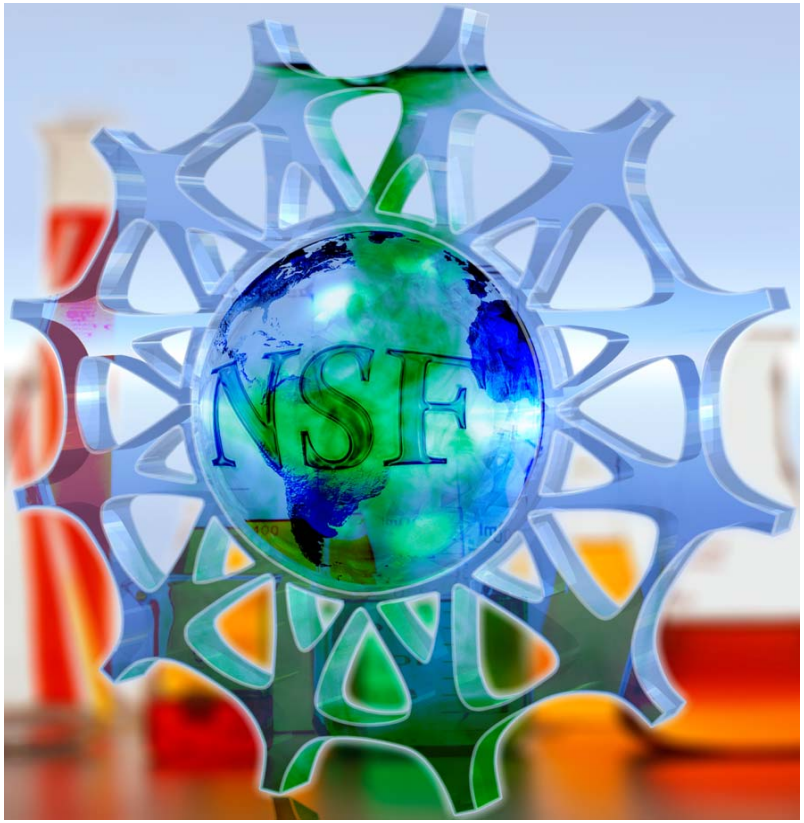
Up to 5% of budget allowed

About 0.5% budget used



Finding a Proposal's Home

Tanja Pietraß (CSDM & CMI)

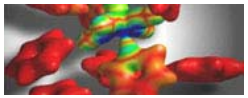


Contemporary Structure for CHE

Goal:

Realign CHE to guarantee that the very best projects in research, education, training, and infrastructure development are supported and to anticipate and respond to new developments in chemistry.

- Match how chemistry research (not teaching) is currently done
- Has names that are clear to the community of PIs
- Has names that mean something to the public



NSF Division of Chemistry

Office of the Division Director

Luis Echegoyen
Division Director
(Clemson Univ)

Janice Hicks
Executive Officer

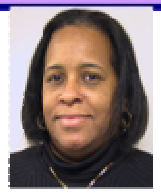
Marsine Jefferson-Brown
Program Support Mgr

Debbie Jones
Operations Specialist

Paul Spyropoulos
IT Specialist

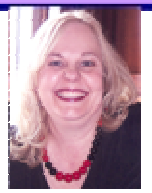
Program Support Team

Elinor Bruno
Administrative Assistant

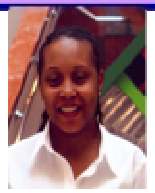


Marsha Hawkins
Program Assistant
(CSDM, CMI, TMC, ECS)

Irma Johnson
Program Assistant
(ICA)



Jane Montgomery
Program Assistant
(SYN, MSN, CLP, CAT)



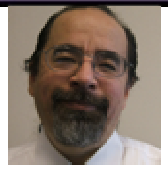
Dee Perkins
Student Program Assistant (ICA)

Technical Staff

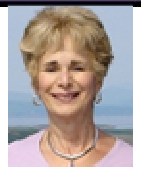
Carol Bessel
Program Director
(CAT, CSDM)

Wilfredo Colon
Program Director
(CLP)

Kelsey Cook
Program Director
(CMI)



Colby Foss
Program Director
(CSDM)



Evi Goldfield
Program Director
(TMC)

Estela Blaisten
Program Director
(TMC)

George Janini
Program Director
(MSN)

George Kenyon
Program Director
(SYN,CLP)

Tingyu Li
Program Director
(SYN)

Tyrone Mitchell
Program Director
(CSDM , CAT)

Timothy Patten
Program Director
(SYN, MSN)

Tanja Pietrass
Program Director
(CMI , CSDM)

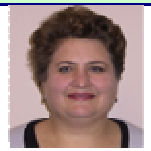
Daniel Rabinovich
Program Director
(SYN, CLP)

Zeev Rosenzweig
Program Director
(ECS, MSN)

Suk-Wah Tam-Chang
Program Director
(SYN, MSN)

Renee Wilkerson
Progam Analyst
(CMI, CSDM, TMC, ECS)

Integrative Chemistry Activities

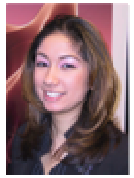


Katharine Covert
Program Director
(ICA)

Robert Kuczkowski
Program Director
(ICA)

Carlos Murillo
Program Director
(ICA)

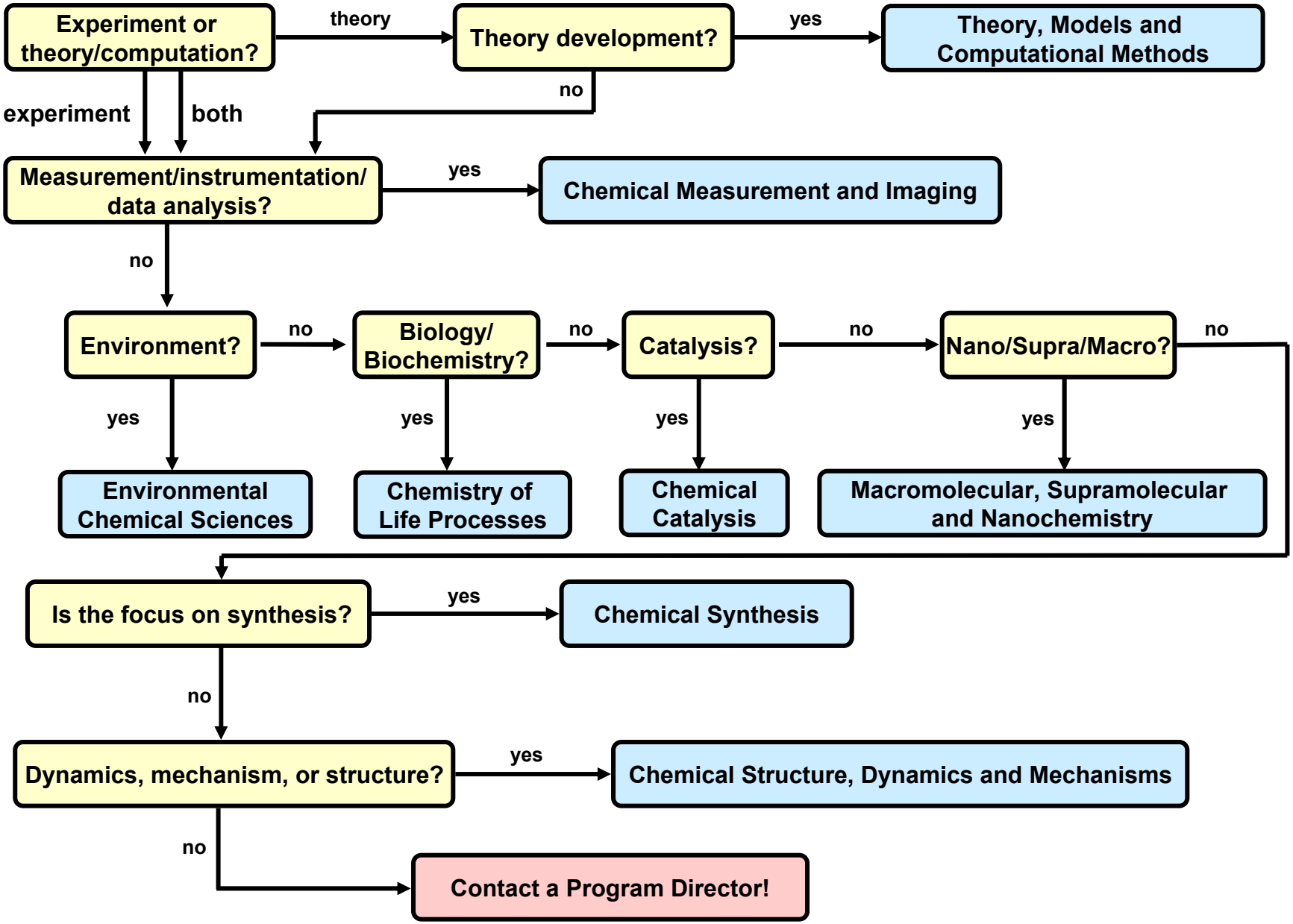
Charles Pibel
Program Director
(ICA)



Khaleelah Po Rome
Science Assistant
(ICA)

Chemical Catalysis	(CAT)
Chemical Measurement & Imaging	(CMI)
Chemical Structure, Dynamics & Mechanisms	(CSDM)
Chemical Synthesis	(SYN)
Chemistry of Life Processes	(CLP)
Integrative Chemistry Activities	(ICA)
Environmental Chemical Sciences	(ECS)
Macromolecular, Supramolecular & Nanochemistry	(MSN)
Theory, Models & Computational Methods	(TMC)

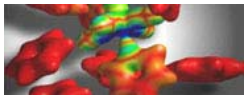
Finding a Home for an Unsolicited Proposal



How Will We Determine Funding for the New Programs?

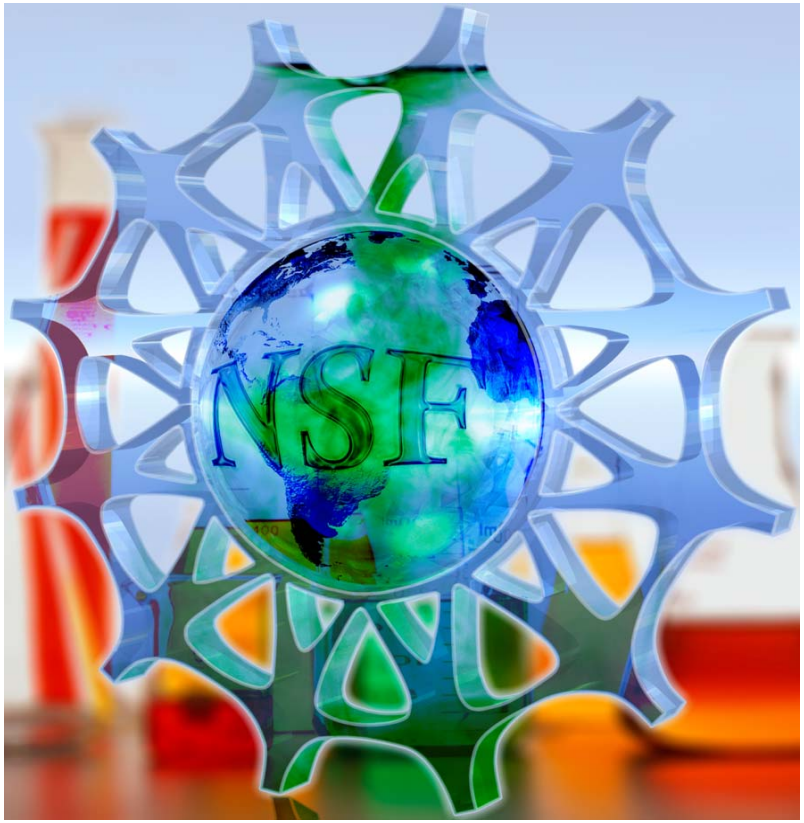
Currently, funds are allocated to programs according to proposal pressure, portfolio balance and the quality of proposals.

This will not change **in the realignment.**



The Career Stages of a Chemist: Junior Faculty

Carol Bessel (CAT and CSDM)



Faculty Early Career Development Program (CAREER)

NSF-wide activity that offers prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research within the context of their organization's mission

See solicitation: NSF 08-557 and Frequently Asked Questions (FAQ) on NSF website

Next full proposal deadline date: July 22, 2010 for MPS Directorate (Chemistry, Materials Research, Physics, Astronomy and Mathematical Sciences)

How does CAREER differ from other individual investigator programs?

CAREER proposals must concentrate on the *integration of education and research* as a major component of the broader impact activities

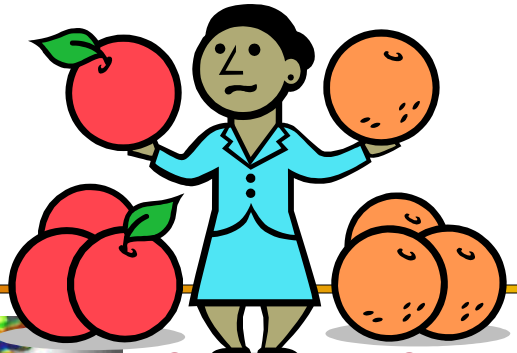
CAREER highlights the independent research award - no co-PIs (collaborators are allowed)

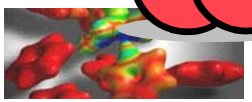
Consider appropriate scope and duration – want to achieve balance between strong focus and attainable research goals

- CAREER – 5 years
- "Regular program" (IIA) – 3 years
- May hold both CAREER and IIA, but this is rare

Cannot mix solicitations, e.g.,

proposers from PUIs are encouraged
to submit CAREER proposals
but then do not follow RUI guidelines
(impact statements, certification)





When is the best time to apply to the CAREER Program?

Each PI is given up to three CAREER attempts.

There is no one best time to submit…

- You will want to make a good *first impression* on University administrators, reviewers/panelists, and NSF staff (i.e., best not to submit "practice" proposals, make sure Chair's letter and other letters of collaboration are prepared well in advance)
- The expected level of preliminary results varies by Program even within the Chemistry Division. Be prepared to showcase your *independent* research and teaching accomplishments (i.e., best not to submit before you arrive at your institution)
- Submitting before the deadline may help avoid non-compliance issues

What is appropriate level of funding to request?

- Again, one size does not fit all
- Minimum CAREER grant is $400 K (total for 5 years) except for BIO which has a minimum of $600 K
- Typical 2009 CHE CAREER awards were $115-120 K /y total costs (direct and indirect)
- An additional $30-50K of well-justified equipment is often awarded in the first year
- PI summer salary – 1 mo. for Ph.D.-granting institutions; 2 mo. for primarily undergraduate institutions (PUIs). Teaching load reductions are extremely rare. PIs can receive only two months NSF salary from all sources (with some, rare exceptions).

How many pages should I devote to research and how many to education?

Again, one plan does not fit everyone;

- CAREER proposals will be assessed for their educational plans and the integration of research and education
  - consider level of impact,
  - number of people impacted,
  - five year duration of award

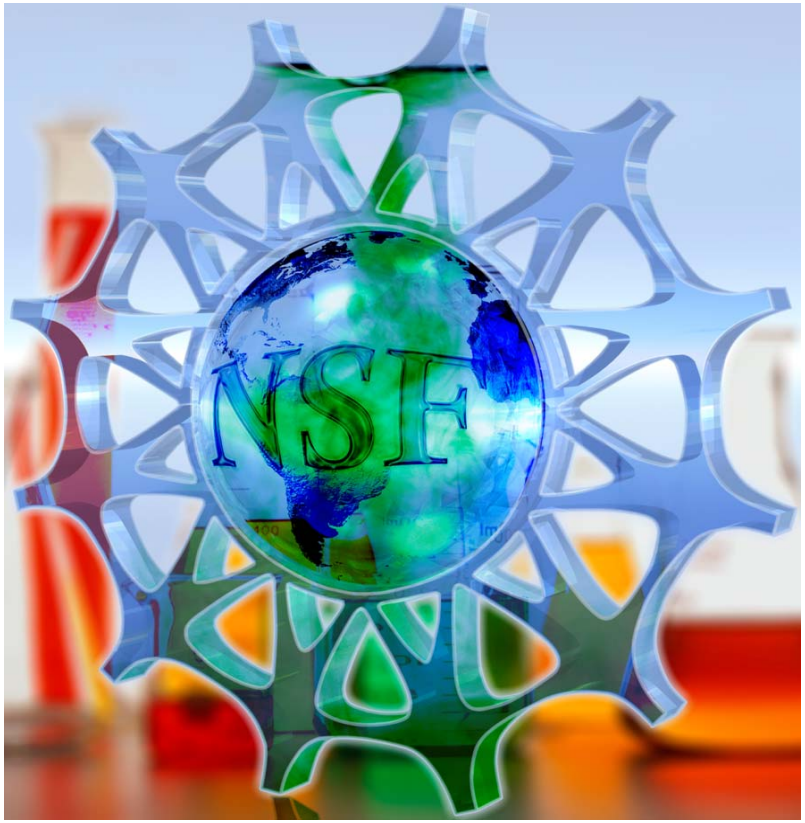
- NSF staff will also consider broadening opportunities for the participation of all citizens - women and men, underrepresented minorities, and persons with disabilities, geographically isolated, economically disadvantaged

- *creativity is encouraged*

(PIs may examine NSF Awards database for example activities)

NSF Merit Review Criteria

Kelsey Cook (CMI)



What is the intellectual merit of the proposed activity?

How ***important*** is the proposed activity to ***advancing knowledge and understanding*** within its own field or across different fields? How well ***qualified*** is the proposer (individual or team) to conduct the project? (If appropriate, the reviewer will comment on the ***quality of the prior work***.) To what extent does the proposed activity suggest and explore ***creative, original, or potentially transformative concepts***? How ***well conceived and organized*** is the proposed activity? Is there sufficient ***access to resources***?

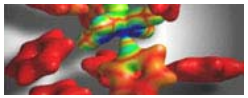
What is the intellectual merit of the proposed activity?

Does it matter? (WHY?)

Is it novel? (What?)

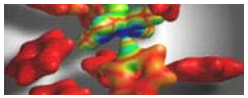
Can it work? (How?)

Can this PI/team do it? (Who?)



What are the broader impacts of the proposed activity?

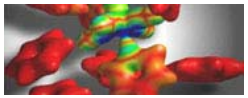
How well does the activity ***advance discovery*** and understanding while ***promoting teaching, training, and learning***? How well does the proposed activity ***broaden the participation of underrepresented groups*** (e.g., gender, ethnicity, disability, geographic, etc.)? To what extent will it ***enhance the infrastructure*** for research and education, such as facilities, instrumentation, networks, and partnerships? Will the results be ***disseminated*** broadly to enhance scientific and technological understanding? What may be the ***benefits*** of the proposed activity to society?



What are the broader impacts of the proposed activity?

- ***Technical*** Impacts
  - ***Potential utility across disciplines***
  - ***Infrastructure***
- ***Societal*** Impacts (also benefit us!)
  - ***Promote teaching, training, learning***
  - ***Outreach***
  - ***Broadening participation***

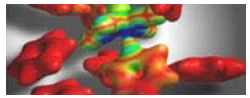
Details and examples: Search “broader impacts posters” or “broader impacts nsf”



"NSF staff also will give careful consideration to the following in making funding decisions" (GPG)

Integration of Research and Education

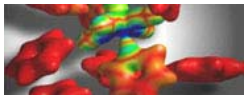
Integrating Diversity into NSF Programs, Projects, and Activities



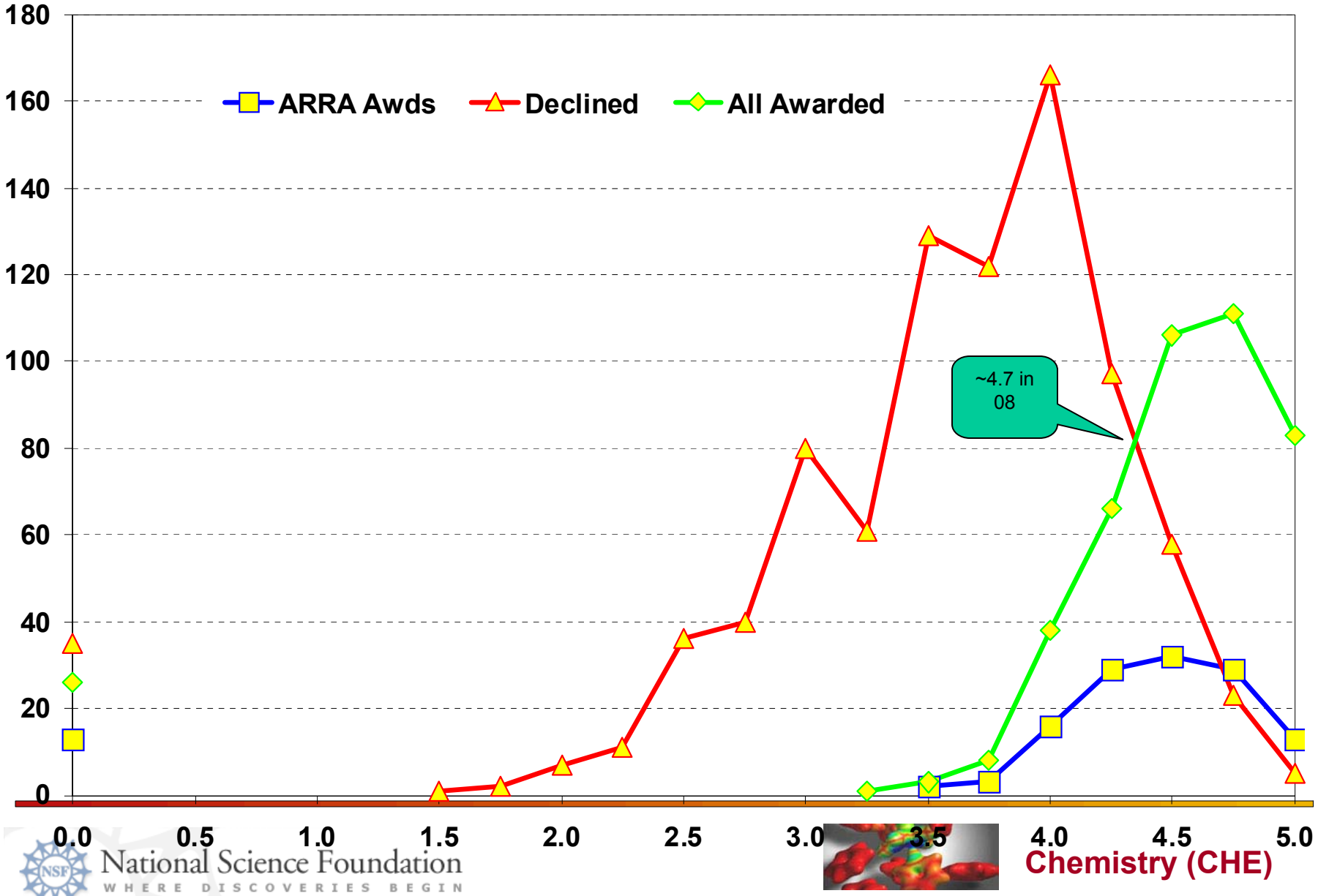
Be a Responsible Reviewer!

We seek *merit* review by experts and generalists

- **Comments are more important than the box checked (E, V, G, F, P)**
- **Program officers calibrate for "Lake Woebegone" and "Child Eater" disciplines**
- **"Portfolio" considerations**



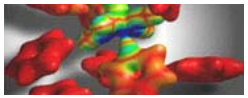
Mail Review Rating Distribution
FY 2009, IIA Programs



Be a Responsible Reviewer!

Be *constructive*

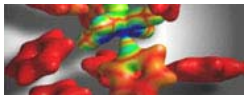
- What's good? What's important?
- What's missed? What needs improvement?
- Review the proposal, not the person (except qualifications & prior productivity)
- Comment on BOTH standard review criteria and any special criteria (strengths, weaknesses)
- OK to comment on clarity, budget, etc.
- Avoid *ad hominem* & identifying comments



Be a Responsible Reviewer!

Respond in a timely manner

- **Most relevant reviewers are asked first => Please review!**
- **Disciplinary service: Best chance for enthusiastic reviews**
- **Respond even if the answer is “no” (suggest alternatives!)**
- **Assures *timely* response (6-month “GPRA” – Government Performance and Results Act – target)**

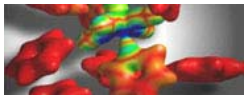


YOUR **response is important!**

We require 3 reviews

Typically start with 6 requests

ASC 2001-2007: 1239 actions averaged 8 requests



What happens after I receive a CAREER award?

The real work begins!

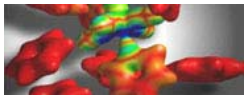
Continue dialogue with your Program Director

(* see later sessions of this symposium)

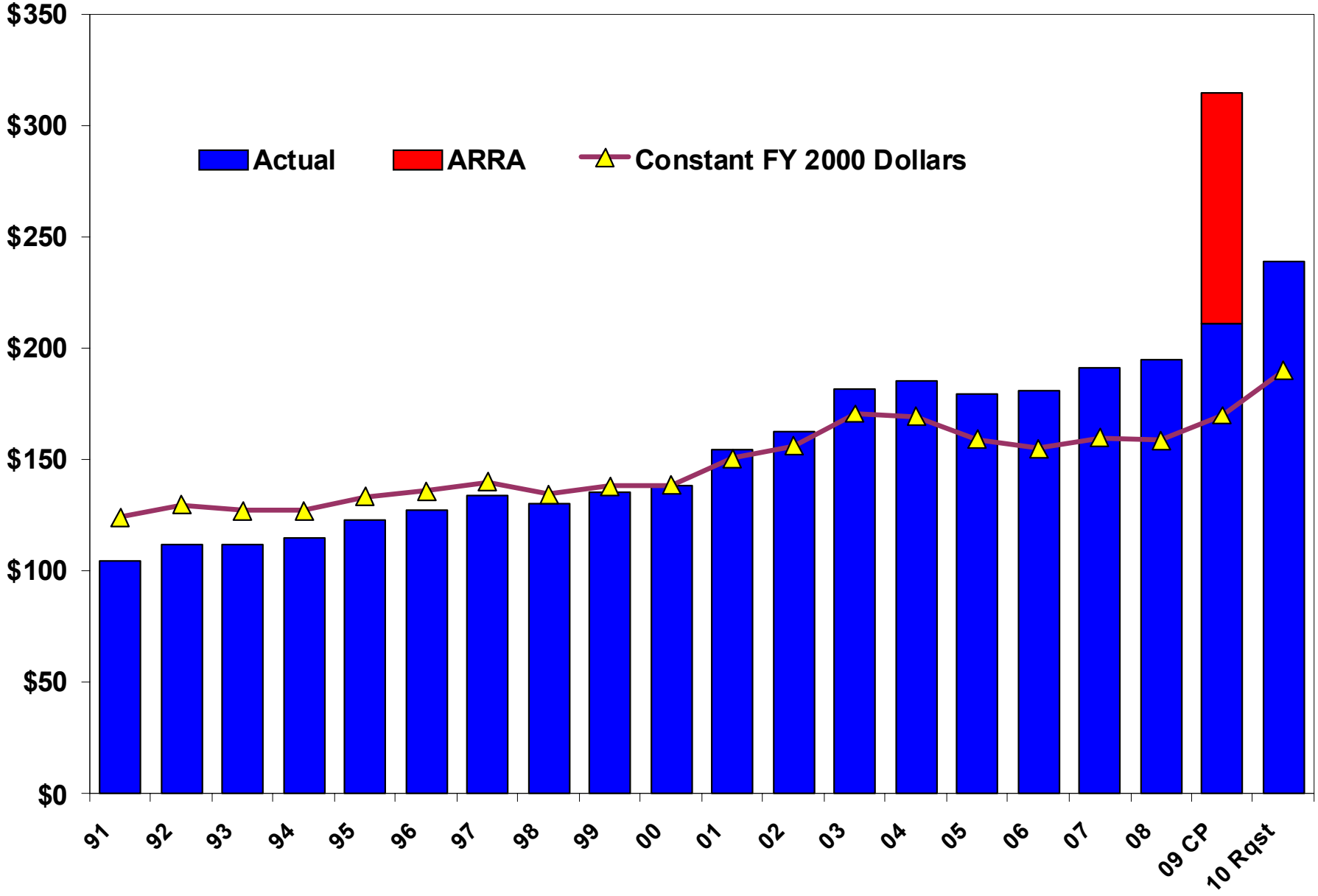
- Annual reports
- Highlights / examples of exemplary research or educational activities*
- PI transfers, Leave of absence, Significant changes in project scope or budget allocations, etc.
- Supplements:
  - Research Opportunity Awards (ROA)*
  - Research Experiences for Teachers (RET)*
  - Research Experiences for Undergraduates (REU)
  - Broken instrumentation

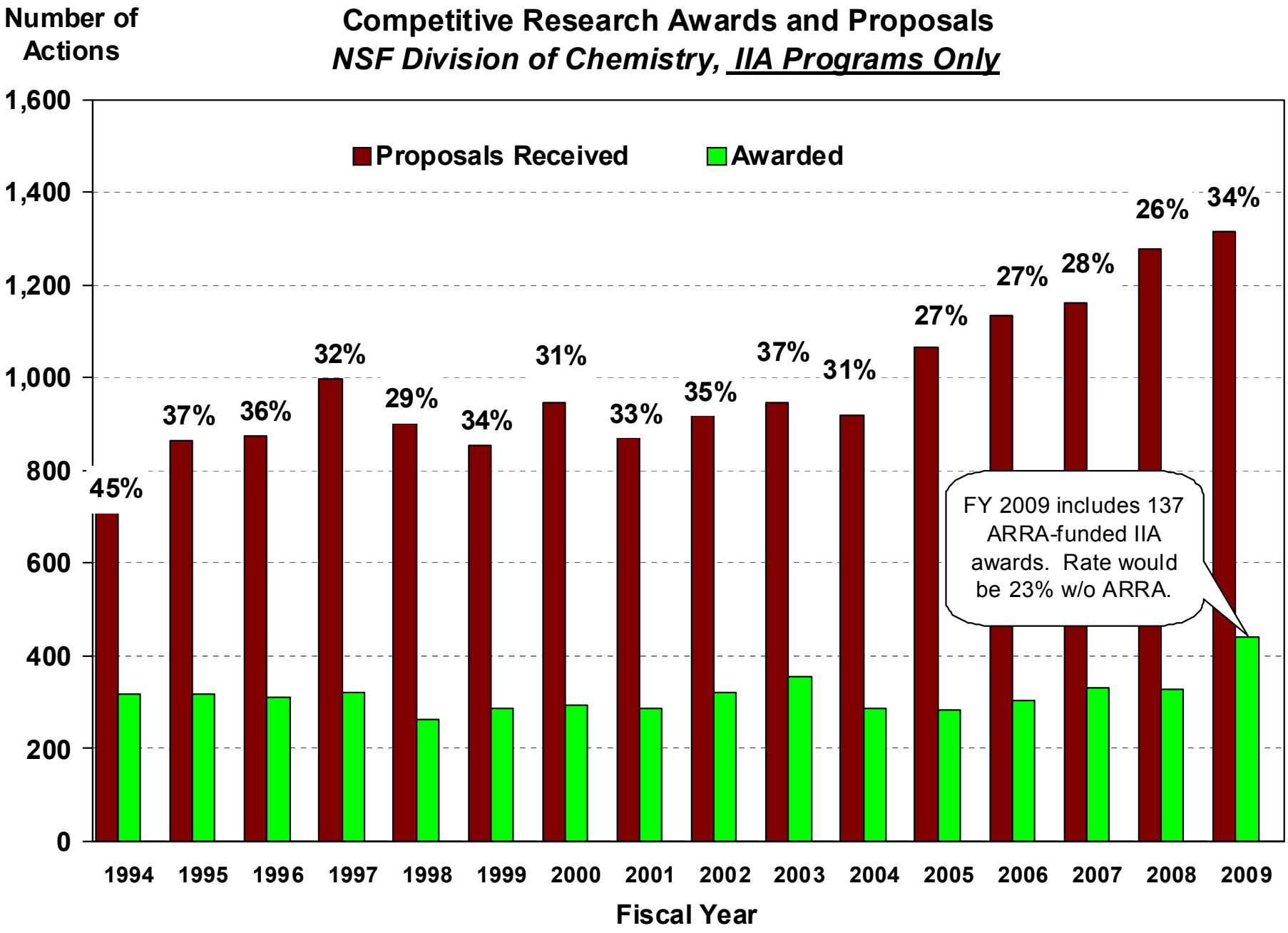
Please help us review!

Some Funding Statistics: The Cloudy Crystal Ball

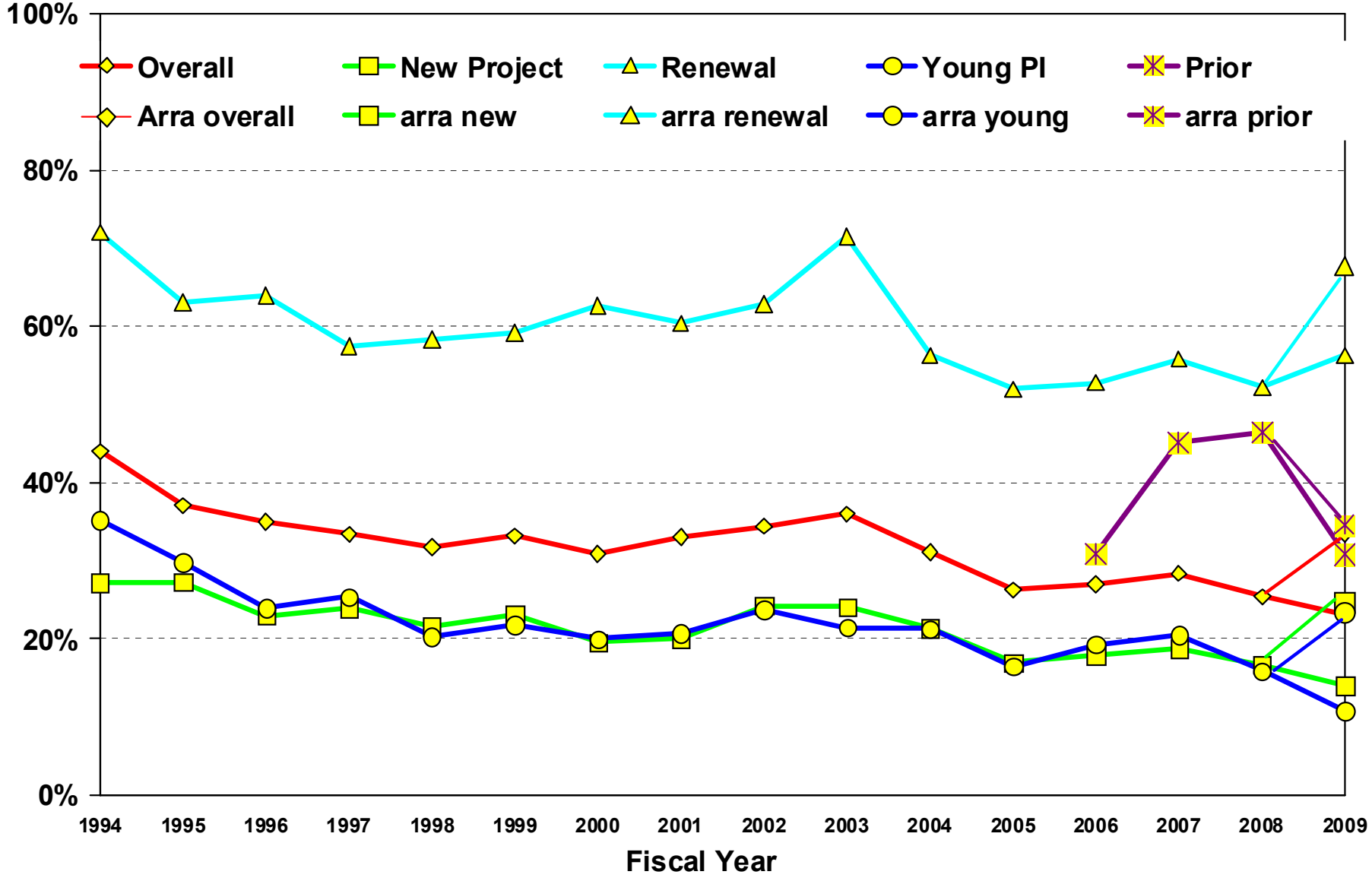


ARRA Funding in FY 2009

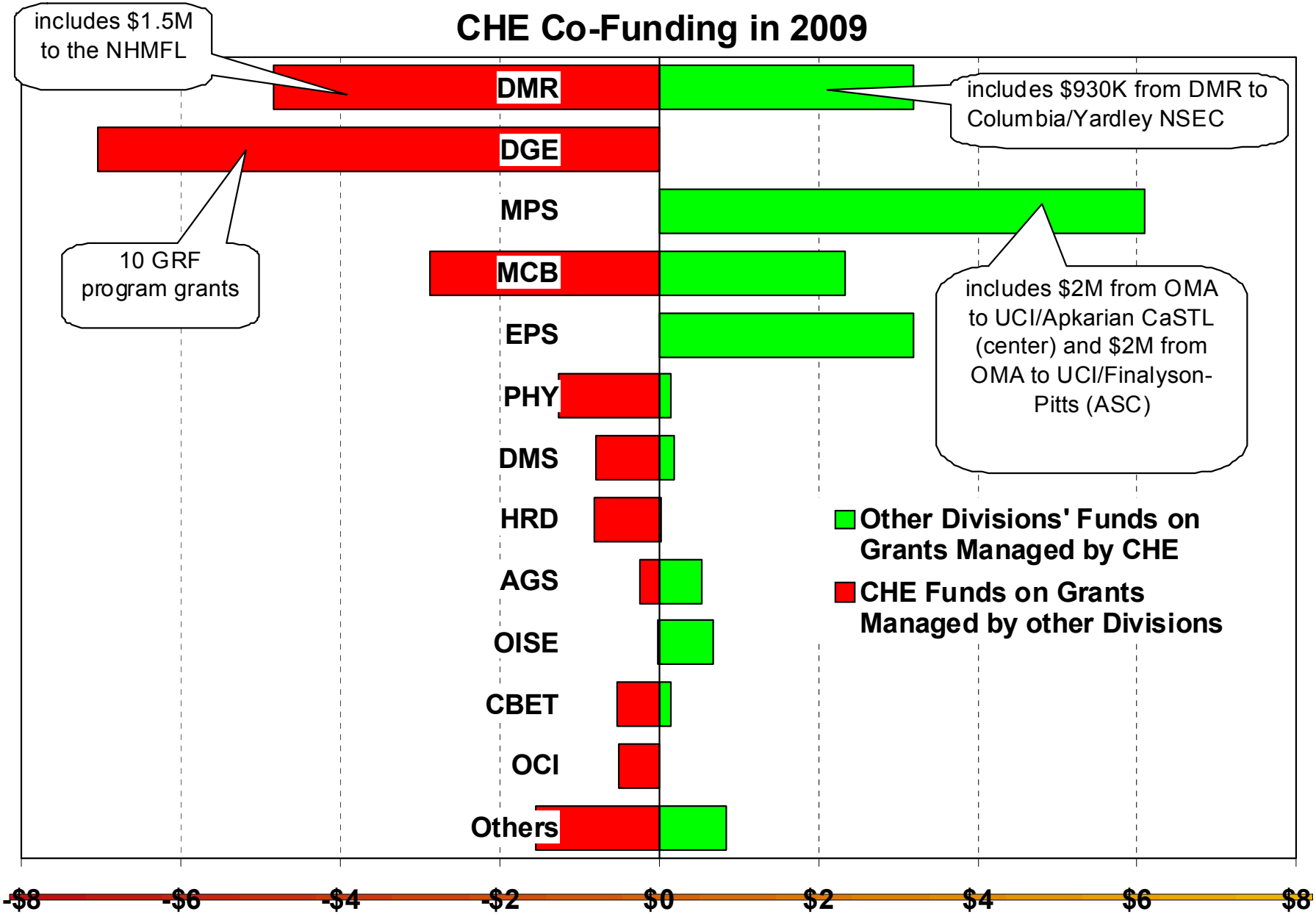


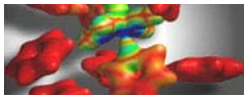

Number of Actions
Competitive Research Awards and Proposals
NSF Division of Chemistry, IIA Programs Only
Proposals Received
Awarded
1,600
1,400
1,200
1,000
800
600
400
200
0
45%
37%
36%
32%
29%
34%
31%
33%
35%
37%
31%
27%
27%
28%
26%
34%
FY 2009 includes 137 ARRA-funded IIA awards. Rate would be 23% w/o ARRA.
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Fiscal Year

Funding Rates for Research Proposals
NSF Division of Chemistry

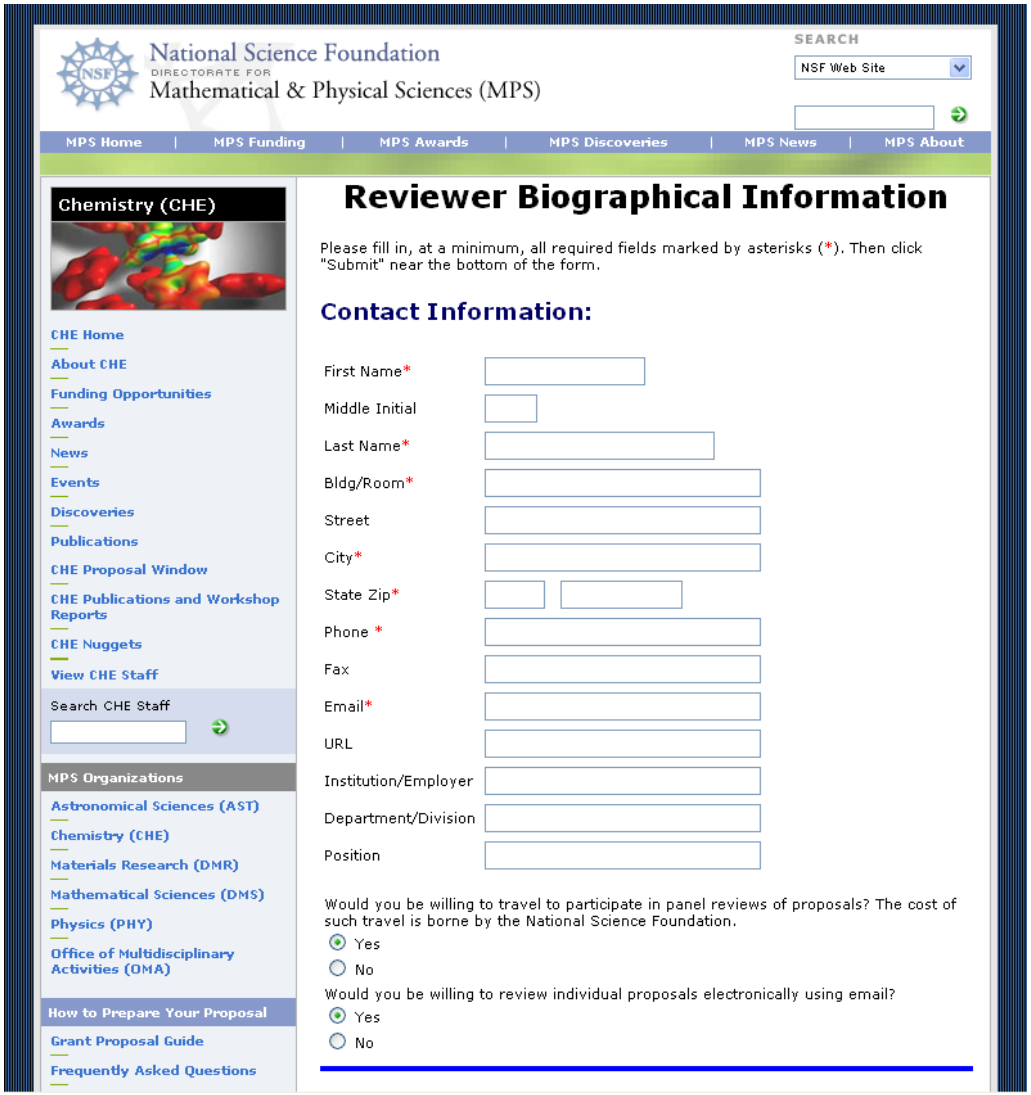


CHE Co-Funding in 2009





Would you like to be a reviewer?



National Science Foundation
Division of Chemistry

Would you like to review proposals for NSF?

Please go to:
http://www.nsf.gov/mps/che/reviewer/reviewer_info.jsp

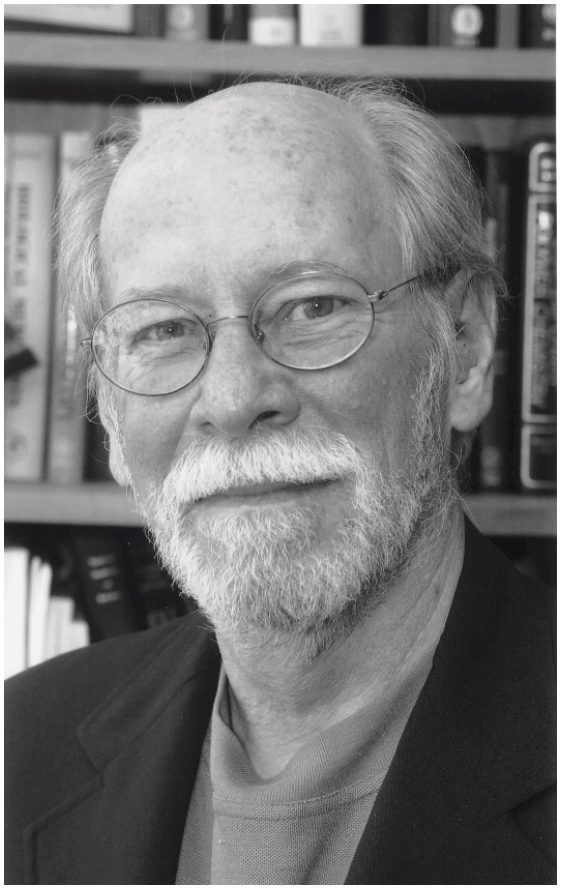
URL: www.nsf.gov/chem Phone: 703.292.8840

Would you like to be a panelist?

- Only a fraction of CHE proposals are panel reviewed
- Take part in mail reviewing
- Provide substantive reviews, justifying your opinion
- Review within 4 weeks of request
- Let your interest be known
- Visit NSF (with a purpose)

"A great learning experience!"

Rotators



"Being an NSF Rotator and being exposed to a blizzard of ideas and ways to think about a research project was a mind-stretching experience that seriously influenced how I thereafter did chemistry. I left NSF less parochial, and much more adventuresome about entering new research subjects."

Royce W. Murray, CHE 1971-72

Questions?

Kelsey Cook
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kcook@nsf.gov
http://www.nsf.gov/chem